

### Overall Major Requirements

- 42-60 non-duplicative biology credits
- A minimum of 36 senior-level credits
- A minimum of 18 credits at the 300- or 400-level
- At least 6 credits at the 400-level
- All Biology majors complete the same 12 credits in Specific Major Requirements, and an additional 30 to 48 credits in senior-level courses which are determined by a student's choice of either the (1) *General Biology* Major, or one of the (2) *Molecular/Cellular* or (3) *Ecology and Diversity* Streams

### Declaration Process

The Biology major is a competitive major. Students must complete BIOL 107 and BIOL 108 plus one of BIOL 207 or BIOL 208 with no grade lower than C-. They must also have either completed or be enrolled in the remaining BIOL 207 or 208 course during the winter term when declarations close.

The number of new seats available in the Biology major will be determined by the Biology department annually. Students will submit their declaration by January 15. Students who apply will be ranked by their admissions GPA, which is calculated using their most recent 24 credits of university-level course work, without breaking up a term. The applicants with the highest GPA will be admitted to the program first, until no seats remain. Students will be notified of the success or denial of their application to the Biology major no later than February 1.

Students who have completed the above criteria and submit their declaration prior to January 15, may be considered and have their declaration processed before the deadline.

### Required Courses for the Biological Sciences Major

Biological Science majors are required to complete the following courses:

- CHEM 101 University Chemistry I
- CHEM 102 University Chemistry II
- STAT 151 Introduction to Applied Statistics *OR* STAT 161 Applied Statistics for the Social Sciences

### Specific Major Requirements(Required for all Majors)

12 Credits

- BIOL 107 Introduction to Cell Biology
- BIOL 108 Organisms in Their Environment
- BIOL 207 Principles of Genetics
- BIOL 208 Principles of Ecology

### Choose one of the following for the remaining 30-48 credits:

#### (1) General Biological Sciences Requirements

30 to 48 Credits

Students may choose from junior- and senior-level Biochemistry, Biology, Botany, Genetics, Zoology or SCIE 201

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**(2) Molecular/Cellular Stream Requirements****30 to 48 Credits**

Choose minimum of 30 credits from the following Molecular/Cellular courses

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|--|---|
| <input type="checkbox"/> BICM 200 Introductory Biochemistry              | <input type="checkbox"/> BIOL 421 Techniques in Mol. & Cell Biol. |
| <input type="checkbox"/> BICM 310 Intermediary Metabolism                | <input type="checkbox"/> BIOL 430 Pathobiology Cell Disease       |
| <input type="checkbox"/> BICM 320 Structure and Function of Biomolecules | <input type="checkbox"/> BIOL 492 Field Placement                 |
| <input type="checkbox"/> BICM 330 Nucleic Acid Biochemistry              | <input type="checkbox"/> BIOL 495 Special Topics                  |
| <input type="checkbox"/> BIOL 201 Eukaryotic Cellular Biology I          | <input type="checkbox"/> BIOL 498 Advanced Independent Study      |
| <input type="checkbox"/> BIOL 205 Molecular Biology                      | <input type="checkbox"/> GENE 317 Genetics and Society            |
| <input type="checkbox"/> BIOL 211 Introduction to Microbiology           | <input type="checkbox"/> GENE 369 Genetic Analysis of Bacteria    |
| <input type="checkbox"/> BIOL 300 Eukaryotic Cellular Biology II         | <input type="checkbox"/> GENE 370 Genetic Analysis of Eukaryotes  |
| <input type="checkbox"/> BIOL 313 Animal Developmental Biology           | <input type="checkbox"/> GENE 400 Genome Organization             |
| <input type="checkbox"/> BIOL 315 History of Biology                     | <input type="checkbox"/> GENE 404 Gene Regulation                 |
| <input type="checkbox"/> BIOL 321 Mechanisms of Evolution                | <input type="checkbox"/> GENE 418 Human Genetics                  |
| <input type="checkbox"/> BIOL 323 Introduction to Population Genetics    | <input type="checkbox"/> ZOO 241 Animal Physiology I              |
| <input type="checkbox"/> BIOL 337 Biostatistics and Research Design      | <input type="checkbox"/> ZOO 242 Animal Physiology II             |
| <input type="checkbox"/> BIOL 413 Advanced Animal Developmental Biology  |   |

Students can choose up to 18 credits in junior- and senior-level Biochemistry, Biology, Botany, Genetics, Zoology or SCIE 201:

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|--------------------------------|--------------------------------|--------------------------------|
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| <input type="checkbox"/> _____ | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ |

**(3) Ecology and Diversity Stream Requirements****30 to 48 Credits**

Choose minimum of 30 credits from the following Ecology and Diversity courses

- |   |   |
|---|---|
| <input type="checkbox"/> BIOL 310 Fresh Water Ecology                 | <input type="checkbox"/> BIOL 492 Field Placement                     |
| <input type="checkbox"/> BIOL 312 Terrestrial Ecology                 | <input type="checkbox"/> BIOL 495 Special Topics                      |
| <input type="checkbox"/> BIOL 314 Population Ecology                  | <input type="checkbox"/> BIOL 498 Advanced Independent Study          |
| <input type="checkbox"/> BIOL 315 History of Biology                  |   |
| <input type="checkbox"/> BIOL 316 Community Ecology                   | <input type="checkbox"/> BOTN 205 Fundamentals of Plant Biology       |
| <input type="checkbox"/> BIOL 321 Mechanisms of Evolution             | <input type="checkbox"/> BOTN 305 Plant Responses and Interactions    |
| <input type="checkbox"/> BIOL 323 Introduction to Population Genetics | <input type="checkbox"/> ZOO 224 Vertebrate Adaptations and Evolution |
| <input type="checkbox"/> BIOL 337 Biostatistics and Research Design   | <input type="checkbox"/> ZOO 241 Animal Physiology I                  |
| <input type="checkbox"/> BIOL 361 Marine Biology                      | <input type="checkbox"/> ZOO 242 Animal Physiology II                 |
| <input type="checkbox"/> BIOL 365 Tropical Rainforest Ecology         | <input type="checkbox"/> ZOO 250 Survey of the Invertebrates          |
| <input type="checkbox"/> BIOL 367 Conservation Biology                | <input type="checkbox"/> ZOO 324 Comparative Anatomy or Vertebrates   |
| <input type="checkbox"/> BIOL 371 Animal Behaviour                    | <input type="checkbox"/> ZOO 400 Aquatic Vertebrates                  |
| <input type="checkbox"/> BIOL 410 Techniques in Field Ecology         | <input type="checkbox"/> ZOO 401 Terrestrial Vertebrates              |
| <input type="checkbox"/> BIOL 414 Invasion Ecology and Management     | <input type="checkbox"/> ZOO 425 Introductory Entomology              |
| <input type="checkbox"/> BIOL 422 Experimental Ecology                | <input type="checkbox"/> ZOO 452 Principles of Parasitism             |

Students can choose up to 18 credits in junior- and senior-level Biochemistry, Biology, Botany, Genetics, Zoology or SCIE 201:

- |                                |                                |                                |
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| <input type="checkbox"/> _____ | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ |
| <input type="checkbox"/> _____ | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ |

**Biological Sciences Major (42 to 60 credits)****Total Credits:** \_\_\_\_\_

### Important Planning Notes

1. Courses required for the major may be used to satisfy the breadth requirements in a Bachelor of Arts or Science degree. Please refer to the applicable degree planner for details.
2. Students are required to consult the MacEwan University academic calendar to ensure they meet prerequisites for all courses they enrol in.
3. **BIOL 107** and **BIOL 108** must be completed in the first year of a program and can be taken in either order.
4. All students majoring in Biological Sciences should take careful note of the term in which courses are offered; many essential senior-level Biological Sciences courses are offered only once a year. Some senior level courses are offered in alternate years.
5. For students interested in pursuing the Molecular/Cellular Biology stream, **BIOL 205** and **BIOL 207** should be completed in the second year of their program. For students interested in pursuing the Ecology/Diversity Biology stream, **BIOL 208** should be completed in the second year of their program.
6. Students interested in pursuing the Ecology/Diversity Biology stream are encouraged, but not required, to take **STAT 151** in their first year. While it is not a prerequisite for **BIOL 208**, it can be helpful with some of the material covered in the course.
7. CHEM 101 and CHME 103 are equivalent courses. Credit can be obtained in only one of the two courses.
8. CHEM 102 and CHME 105 are equivalent courses. Credit can be obtained in only one of the two courses.
9. Students may take **BIOL 495** and **BIOL 498** for credit a maximum of two times each, as long as the course topic is different each time they take either course.
10. Please keep in mind that course offerings will vary from academic year to academic year.

### Biological Sciences Course Offerings

Please refer to the academic calendar or [MacEwan.ca/Science](http://MacEwan.ca/Science) > Disciplines > Biological Sciences for further information regarding course offerings.